

set aside for the study of these groups in the newly rearranged cryptogamic section of the Museum Building at the New York Botanical Garden. We were particularly honored in that this date was selected for the formal opening of the room and the Chairman of the Field Committee was asked to preside. Dr. W. J. Robbins, Director of the Garden, spoke briefly emphasizing the important contributions that amateurs can make to the collection and study of plants. Dr. Fred Seaver, Curator of Cryptogams, drew attention to the advantage to the Garden in having non-professionals available who are specialists of such eminence that they can assume the supervision of a group of plants. Mr. Hagelstein mentioned the progressive attitude of the Garden in acquiring important collections when they became available. He stressed the need of continuously collecting and replacing myxomycete material. Mr. Burke paid tribute to Mr. Hagelstein's work with these groups of plants. A few moments later Mr. Burke was the speaker on the Garden's regular Saturday afternoon lecture series. He gave a fine talk, beautifully illustrated, on the habits and distinguishing characteristics of the Diatomaceae.

The dedicatory ceremony was held in the Members Room. About ninety people were present representing the Garden staff, the New York Microscopical Society, the Torrey Club, and other friends.

JOHN A. SMALL

PROCEEDINGS OF THE CLUB

MINUTES OF THE MEETING ON JANUARY 15, 1941

The meeting was called to order at 3:30 P.M. by the President, Dr. J. S. Karling, at the New York Botanical Garden. Twenty-four members and friends were present. The minutes of the meeting on January 7 were read and approved with correction.

The death of Mr. Emil F. Heinold, 142-15 249th St., Rosedale, L. I., N. Y., in February, 1940, was reported to the Club.

The Recording Secretary was instructed to cast a unanimous ballot for the election of the following nominees to annual membership: Miss Jean C. Van Auken, 726 E. 27th St., Paterson, N. J.; Mrs. B. Tappen Fairchild, Cold Spring Harbor, L. I., N. Y.; Dr. Julian B. Acuna y Gale, Estacion Exp. Agronomica, Stgo. de las Vegas, Habana, Cuba; Mr. Frank F. Gander, Natural

History Museum, Balboa Park, San Diego, Calif.; Miss Lilian C. Heindol, 142-15 249th St., Rosedale, L. I., N. Y.; Miss H. Anna Kennedy, 30 Park Ave., South Weymouth, Mass.; Mr. Boris A. Krukoff, New York Botanical Garden, Bronx Park, New York, N. Y.; Brother Leon (Joseph Sylvestre Sauget), Colegio De La Salle, Vedado, Habana, Cuba.

The resignations of Dr. E. P. Meinecke, c/o Forest Service, 446 Phelan Building, San Francisco, Calif., from annual membership; and Miss Faye C. Horton, 3416 93rd St., Jackson Heights, N. Y.; Mr. W. D. Vanderbilt, 527 W. 121st St., New York, N. Y.; Mrs. S. S. Vanderbilt, 527 W. 121st St., New York, N. Y., from associate membership were accepted with regret.

The nomination of Dr. A. H. Graves, Dr. Ralph H. Cheney, and Dr. J. J. Copeland to serve on the auditing committee was announced by the President.

Dr. M. A. Raines of Howard University gave a lecture in the scientific part of the program on "Methods of Growing Plants in Water and in Air." The speaker's abstract follows:

A project to devise a method of growing plants especially suited for studying root growth by time-lapse motion picture photography has resulted in the development of the "Wick-Culture Technique"—in which the plant roots develop on the surface of a sheet of absorbent material (such as black blotting paper) supported in a nearly vertical position and supplied with water from above. In the preferred form of this set-up, the absorbent sheet rests against a sheet of plate glass, the roots developing between the absorbent sheet and the glass. The recent development of glass cloth greatly extends the possibilities of the wick-culture technique for investigations on root physiology and pathology.

Experience with a "Germinator for Root Work" (constructed on the principle of the set-up for wick culture) was taken to indicate that gentle washing of the surfaces of a plant situated in a moist chamber retards the development of mold on them. This has led to experimentation with a "Spray Chamber"—essentially a moist chamber equipped with facilities for subjecting plants contained in it to a spray of water. In the spray chamber plant turgor is not only maintained, but may be increased. An indication of the possibilities of the spray chamber is given by its successful use for obtaining abundant regeneration of roots on large leafy cuttings of willow, poplar, and other plants. On the debit side, it must be noted that prolonged washing may be harmful to the plant. A variation of the spray chamber is the "Aerated Moist Chamber" in which air is bubbled through water at the bottom of the moist chamber.

A second project, on methods of feeding soluble carbohydrates to plants, had led to the demonstration that this may be accomplished without steriliza-

tion or the use of aseptic precautions in the case of absorbing roots suspended in air—nutrient solution being supplied by occasional dipping or by a spray. Apparently, the carbohydrate is absorbed sufficiently rapidly to avoid deleterious development of bacteria or molds on the root surfaces.

On the theoretical side: Casting about for a unifying scheme for the many methods of growing plants, an experiment by Julius Sachs (1874) on the growth of roots in air, in water, and in soil is recalled, from which Sachs concluded that roots develop best when they are supplied both air and water in easily available form—that is, water in the liquid form, and air in the form of free gas. His experiment also indicated that air and water may be supplied separately, the root being now in air and now in water. Proceeding on the suggestion contained in this experiment by Sachs, a canvass is made of possible culture methods for plants according to the form in which air and water are supplied to the plant roots, and it is noted how readily the various methods, old and new, of growing plants fit into this scheme.

The meeting was adjourned at 4:40 P.M.

Respectfully submitted,

JOHN W. THOMSON, JR.
Recording Secretary

NEWS NOTES

Mr. G. C. Nearing who has been a frequent contributor to *TORREYA* on the topic of lichens announces the first of a series of a sixteen-page section that will comprise his volume "The Lichen Book." The entire book will contain thirty groups and the first twelve are now nearly completed. The drawings will appear alongside the description which will enhance the usefulness of the book. The material that appeared in *TORREYA* will be extended since new forms have been collected. The system of keys will consist of thirty-five charts most of them double paged. About 500 species will be described and the finished book will be close to 400 pages.

Mr. Nearing will assume publication of the series and the terms of subscription are \$1.00 in advance for five sections of sixteen pages. The entire publication cost not to exceed \$5.00. The sections as issued will be loose and unbound. When the series are completed the subscriber will receive, in addition to the loose-leaf sections, a complete book bound in cloth. It is estimated that a period of three years will be necessary to complete the work. Mr. Nearing will endeavor to keep the series as a beginner's book for quick reference. Cross references will anticipate likely confusions.